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REMARKS

The application has been reviewed in light of the Office Action dated July 19, 2007. Claims 1-37 are pending. By this Amendment, claims 1, 2, 21, 23, 24 and 37 have been amended to clarify the claimed subject matter. Accordingly, claims 1-37 are presented for reconsideration, with claims 1, 21, 23, 24 and 37 being in independent form.

The specification was objected to as having informalities. Claims 6, 7, 9, 11-20, 27, 28, 30 and 32-36 were objected to as having informalities. Claim 37 was rejected under 35 U.S.C. § 101 as purportedly directed to non-statutory subject matter.

The specification has been reviewed and amended to correct English grammar, syntax and idiom as well as to correct the formal matters noted in the Office Action.

In response, the claims have been carefully reviewed with particular attention to the points raised in the Office Action, and have been amended to clarify the claimed subject matter, without narrowing a scope of the claims.

Withdrawal of the objection to the specification, the objection to the claims and the rejection under 35 U.S.C. § 101 is respectfully requested.

Claims 1, 2, 4, 5, 8, 10, 23-26, 29, 31 and 37 were rejected under 35 U.S.C. § 102(e) as purportedly anticipated by Kumada (US 2002/0145744 A1). Claim 3 was rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Kumada, in view of U.S. Patent No. 7,064,860 to Balasubramanian. Claim 21 and 22 were rejected under as being purportedly unpatentable over Kumada in view of U.S. Patent No. 6,870,636 to Kulkarni.

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1, 21, 23, 24 and 37 are patentable over the cited art, for at least the following reasons.

This application relates to updating a printer profile based on color data obtained from measurement of a color chart. Applicant devised an improved approach for updating a printer profile with an optimized number of color patches wherein color conversion is performed to input color data obtained from measurement of a color chart, the conversion data and history information of the measurement of the color chart are stored, the history information is compared with information of new measurement of the color chart to determine number of color patches, and the printer profile is updated based on the number of color patches determined based on the comparison of the history

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information with the information of new measurement of the color chart. Each of independent claims 1, 21, 23, 24 and 37 of the present application addresses these features, as well as additional features. Such approach enables the colorimetry of the printer to be properly characterized.

Kumada, as understood by Applicant, proposes an approach for obtaining a printer profile that approximates nonlinear output characteristics of a color printer. The system proposed by Kumada also manages generation history of the generated profile, and the profile is stored along with colorimetry history of the printer.

However, Kumada, contrary to the contention in the Office Action, does not teach or suggest determining number of color patches by comparing history information of previous measurement of a color chart with information of new measurement of the color chart, and updating a printer profile based on the number of color patches determined based on the comparison of the history information with the information of the new measurement of the color chart, as provided by the subject matter of claim 1 of the present application.

Kumada, [0165], [0166], [0174] and [0178], which was cited in the Office Action, states as follows:

[0165] Colorimetric values Lab of color patches output at *different timings and their history information* are read, and the colorimetric values and standard colorimetric values Lab_i described in the fourth embodiment are compared. If no standard colorimetric values Lab_i are available, colorimetric values used upon generating a profile are used in place of them.

[0166] *On the basis of the relationship between the "color chart output dates" in the history information and color chart average color differences from the standard colorimetric values Lab_i , color difference variations are obtained time-serially.* Note that time-serial color difference variations need not be arranged at given intervals. In other words, the intervals of "color chart output dates" may be unequal. A timing at which a curve approximated by coupling color difference values at respective "color chart output dates" crosses a color difference allowable level dE_i is obtained, and is set to be a profile regeneration timing.

[0174] Therefore, when the color difference has exceeded the allowable level dE_i , a profile is regenerated, and T_m can be set as a profile regeneration term. T_m is calculated every time the profile is regenerated. In such case, T_m is preferably optimized in consideration of previously calculated T_m . *A next regeneration timing can be obtained based on the regeneration term T_m calculated in the past. For example, the next regeneration timing as an optimum timing is obtained from an average value of the plural regeneration terms.*

[0178] When data that visually shows color difference variations shown in, e.g.,

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FIG. 36 is generated and output to the monitor the like in addition to the alarm display shown in FIG. 35, *the user may determine the profile regeneration timing*. In the example of the color difference variation display shown in FIG. 35, the average color difference for all the color patches (entire device color space), the average color difference for a partial color space region such as a flesh tone region, and the color difference for a custom color such as a spot color are shown.

Thus, Kumada is concerned with the timing for regenerating a printer profile, in order to have appropriate data for the color difference analysis proposed by Kumada. Kumada assumes that the desired information is shown if the average color difference for all the color patches (entire device color space), the average color difference for a partial color space region such as a flesh tone region, and the color difference for a custom color such as a spot color are displayed.

However, Kumada neither teaches nor apparently recognizes the value of an optimized number of color patches (by comparing history information of previous measurement of a color chart with information of new measurement of the color chart).

Balasubramanian and Kulkarni, like Kumada, do not teach or suggest determining number of color patches by comparing history information of previous measurement of a color chart with information of new measurement of the color chart, and updating a printer profile based on the number of color patches determined based on the comparison of the history information with the information of the new measurement of the color chart, as provided by the subject matter of claim 1 of the present application.

Balasubramanian, as understood by Applicant, proposes an approach for color management for a printing or display system, wherein the system is adjusted for generating output intended to be viewed under a certain preselected illuminant, in which color balancing corresponding to the illuminant is performed to adjust points in a Tone Reproduction Curve ("TRC") representing device operation.

Kulkarni, as understood by Applicant, proposes a method for determining color mappings for a color printer by deriving a reverse model look-up table, the entries of which represent device dependent colors as a function of device independent colors, based on a forward model look-up table, the entries of which entries represent device independent colors obtained in response to printout of corresponding device dependent colors. In the system proposed by Kulkarni, for each device independent target color, a binary search of the forward model look-up table is performed so

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as to locate a cell that contains the device independent target color, the grid points from the forward model look-up table that define the cell are interpolated so as to obtain device dependent colors corresponding to the device independent target color, and the device dependent color is stored at the grid point for the reverse model look-up table at a position corresponding to the device independent target color.

However, the cited art simply does not teach or suggest an approach for image processing including determining number of color patches by comparing history information of previous measurement of a color chart with information of new measurement of the color chart, and updating a printer profile based on the number of color patches determined based on the comparison of the history information with the information of the new measurement of the color chart, as provided by the subject matter of claim 1 of the present application.

Independent claims 21, 23, 24 and 37 are patentably distinct from the cited art for at least similar reasons.

Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 1, 21, 23, 24 and 37, and the claims depending therefrom, are patentable over the cited art.

The Office Action indicates that claims 6, 7, 9, 11-20, 27, 28, 30 and 32-36 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, since independent claims 1, 21, 23, 24 and 37 are submitted to be patentable over the cited art, no changes to the form of claims 6, 7, 9, 11-20, 27, 28, 30 and 32-36 are believed to be necessary.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance. Accordingly, Applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is

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respectfully requested to call the undersigned attorney.

Respectfully submitted,



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